COMMONWEALTH OF AUSTRALIA

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Warning

CHARLES DARWIN UNIVERSITY

Family Name	
Given Names	
Student Number	
Teaching Period	Semester 1, 2016

FINAL EXAMINATION	**DURATION**
FIN510 – Aspects of Corporate Finance	Reading Time: **10** minutes Writing Time: **180** minutes

INSTRUCTIONS TO CANDIDATES

The examination has **two** sections:

Section A: Suggested Time: 90 mins	**Multiple Choice Questions**: Answer ALL 33 questions Marks as indicated by lecturer
Section B: Suggested Time: 90 mins	**Short Answer Questions**: Answer 4 of 4 questions Marks as indicated by lecturer

Section A must be answered on the Multiple Choice Answer sheet provided and must be handed in with your answer booklet. Please ensure that your name and student number are clearly indicated on your Multiple Choice Answer Sheet, your answer booklet and at the top of this examination paper.

Section B is to be answered in separate booklet.

1.2 Note that questions **ARE NOT** of equal value.
1.3 Read **ALL** questions carefully.

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

This is a RESTRICTED OPEN BOOK examination

Any non-programmable calculator is permitted

No handwritten notes are permitted

Hard copy, unannotated English translation dictionary only

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted	1 x 8 Page Book 1 x 4-Multiple Choice Answer Sheet

THIS EXAMINATION IS PRINTED DOUBLE-SIDED.

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Section A

Multiple Choice Questions

Total No of Marks for this section: 50

This section should be answered on the Multiple Choice Answer Sheet provided. Please ensure that your name and student number have been written on the Multiple Choice Answer sheet and placed in the completed answer Booklet.

Answers should be clearly marked, using black or blue pen. DO NOT write in pencil. If a choice for a particular question is subsequently discarded and a new answer chosen, cross out the original answer & clearly mark the new answer.

Marks for each question are indicated. Suggested Time allocation for Section A: 90mins

Section B

Short Answer Questions

Total No of Marks for this section: 50

This section should be answered in the Answer Booklet provided.

Marks for each question are indicated. Suggested Time allocation for Section B: 90mins

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Q.1 (Max Marks: 15)

Bronson manufacturing is considering replacing an existing production line with a new line that has a greater output capacity and operates with less labor than the existing line. The new line would cost $1 million, have a five year life, and be depreciated using straight line method. At the end of five years, the new line would be sold as scrap for $200,000 (in year 5 dollars). Because the new line is more automated, it would require fewer operators, resulting in a saving of $40,000 per year before tax & unadjusted for inflation (in today's dollars). Additional sales with the new machine are expected to result in additional net cash inflows, before tax, of $60,000 per year (in today's dollars). If Bronson invests in the new line, a one-time investment of $10,000 in additional working capital will be required. The tax rate is 30%, the opportunity cost of capital is 10% and the annual rate of inflation is 3%.

Required:

What is the net present value of the new production line?

Please show your calculations clearly.

(marks: 15)

Q.2 (Max Marks: 15)

The following table lists the lease payments, years remaining until the lease expires, and the discount rates:

Lease	Lease payments	Remaining term	Discount rate
A	$40,000	12 years	10%
B	120,000	8	12
C	9,000	18	14
D	16,000	3	9
E	47,000	20	11

Required:

a. Assuming that the lease payments are made at the beginning of each year, calculate the present value of each lease. (marks: 10)

b. Calculate the amount interest paid during the remaining term of each lease. (marks: 5)

Please show your calculations clearly.

Q. 3 (Max Marks: 8)

Compare and contrast the following dividend policies: *the constant payout ratio policy* and *the constant dollar payout policy*. Which policy do most public companies actually follow? Why?

(marks: 8)

Q 4. (Max Marks: 12)

Firm A's capital structure contains 20% debt and 80% equity. Firm B's capital structure contains 50% debt and 50% equity. Both firms pay 7% annual interest on their debt. The stock of Firm A has a beta of 1.0 and the stock of Firm B has a beta of 1.375. The risk free rate of interest equals 4%, and the expected return on the market portfolio equals 12%.

Required:

a. Calculate the WACC for each firm, assuming there are no taxes.

(marks: 5)

b. Recalculate the WACC for each firm, assuming they face a tax rate of 30%.

(marks: 4)

c. Explain how taking taxes into account in part b) changes your answer found in part a).

(marks: 3)

Please show your calculations clearly.

Formula Sheet

1. FV = PV $(1 + r)^n$

   FV = PV (1+ r x n)

2. PV = $\frac{FV}{(1+r)^n}$

3. FV = $\sum_{t=1}^{n} CF_t (1+r)^{n-t}$

4. FV = PMT $\left[\frac{(1+r)^n - 1}{r}\right]$

5. FV (annuity due) = PMT $\left[\frac{(1+r)^n - 1}{r}\right]$ x $(1+r)$

6. PV = $\sum_{t=1}^{n} CF_t (1+r)^{-t}$

7. PV = $\frac{PMT}{r} \times \left[1 - \frac{1}{(1+r)^n}\right]$

8. PV (annuity due) = $\frac{PMT}{r} \times \left[1 - \frac{1}{(1+r)^n}\right] \times (1+r)$

9. PV (deferred annuity) = $\frac{PMT}{r} \times \left[1 - \frac{1}{(1+r)^n}\right] / (1+r)^{x-1}$

10. PV = $\frac{PMT}{r}$

    PV (deferred constant perpetuity) = $\frac{PMT}{r} / (1+r)^{x-1}$

11. PV = $\frac{CF_1}{r-g}$ where r > g

    PV (deferred growing perpetuity) = $\frac{CF_x}{r-g} / (1+r)^{x-1}$

12. FV = PV $\times \left(1 + \frac{r}{m}\right)^{m \times n}$

13. FV (continuous compounding)= PV $\times \left(e^{r \times n}\right)$

14. EAR = $(1 + \frac{r}{m})^m$ - 1

15. EAR(continuous Compounding) = $e^r - 1$

16. $$P_0 = C \times \left[\frac{1 - \frac{1}{(1+r)^n}}{r} \right] + \frac{M}{(1+r)^n}$$

17. $$P_0 = \frac{C}{2} \times \left[\frac{1 - \frac{1}{(1+\frac{r}{2})^{2n}}}{\frac{r}{2}} \right] + \frac{M}{(1+\frac{r}{2})^{2n}}$$

18. $$(1+r)^2 = (1+r_1)[1+E(r_2)]$$

19. $$(1+r_{nom}) = (1+i)(1+r_{real})$$

20. g = rr $\times$ ROE

21. $$V_S = V_F - V_D - V_P$$

22. Total dollar return = income + capital gain or loss

23. Total % return = total dollar return $\div$ initial investment

24. Variance = $\sigma^2 = \frac{\sum_{t=1}^{N} (R_t - \overline{R})^2}{N-1}$

Variance = $\sigma^2 = \sum P_i \left(R_i - \overline{R}\right)^2$

25. Standard deviation = $\sigma = \sqrt{Variance}$

26. $$\bar{r} = \sum_{i=1}^{n} r_i P_i$$ = E (r)

27. $$\sigma_{ij} = \frac{\sum_{t=1}^{n} (r_{i;t} - \bar{r}_i)(r_{j;t} - \bar{r}_j)}{n-1}$$

28. $$\sigma(\tilde{r}) = \sqrt{\sum_{i=1}^{n} (r_i - \bar{r})^2 \times P_i}$$

29. $$\rho_{ij} = \frac{\sigma_{ij}}{\sigma_i \sigma_j}$$

30. $\sigma_p{}^2 = \sum_{i=1}^{n}\sum_{j=1}^{n} x_i x_j \sigma_{ij}$

$\sigma_p^2 = x_1^2\sigma_1^2 + x_2^2\sigma_2^2 + 2x_1x_2\sigma_{12}$

$\sigma_p^2 = x_1^2\sigma_1^2 + x_2^2\sigma_2^2 + x_3^2\sigma_3^2 + 2x_1x_2\sigma_{12} + 2x_1x_3\sigma_{13} + 2x_2x_3\sigma_{23}$

31. $E(r_p) = r_f + \frac{E(r_m - r_f)}{\sigma_m} \times \sigma_p = r_f + E(r_m - r_f) \times \frac{\sigma_p}{\sigma_m}$

$E(r_p) = r_f + E(r_m - r_f)\beta_p$ where $\beta_p = \frac{\sigma_p}{\sigma_m}$

32. $E(r_i) = r_f + E(r_m - r_f)\beta_i$

33. $\beta = \frac{\text{covariance}(X_t, Y_t)}{Variance(X_t)}$

34. $Covanriance(X_t, Y_t) = \sum_{t=1}^{n} \frac{\left[(r_{i,t} - r_{f,t}) - (\overline{r_{i,t} - r_{f,t}})\right] \times \left[(r_{m,t} - r_{f,t}) - (\overline{r_{m,t} - r_{f,t}})\right]}{n-1}$

35. $E(R_p) = w_1(R_1) + w_2(R_2) + ... + w_n(R_n)$

$w_1 + w_2 + ...w_n = 1$

36. $E(R_i) = R_f + \beta_i(E(R_m) - R_f)$

37. PI = $\frac{\sum_{i=1}^{n} \frac{CF_i}{(1+r)^i}}{CF_0}$

38. Operating Leverage = $\frac{\Delta EBIT}{EBIT} \div \frac{\Delta Sales}{Sales}$

39. WACC = $\left(\frac{D}{D+E}\right)r_d + \left(\frac{E}{D+E}\right)r_e$

40. WACC = $\left(\frac{D}{D+E}\right)(1-T_c)r_d + \left(\frac{E}{D+E}\right)r_e$

41. WACC = $\left(\frac{D}{D+E+P}\right)r_d + \left(\frac{E}{D+E+P}\right)r_e + \left(\frac{P}{D+E+P}\right)r_p$

42. V = (E+D) = $\frac{EBIT}{r}$

43. $r_l = r + (r - r_d)\frac{D}{E}$

44. $V_u = \left[\frac{EBIT(1-T_c)}{r}\right] = \frac{NI}{r}$

45. PV Interest tax Shields = $\frac{(T_c \times r_d D)}{r_d} = T_c \times D$

46. $V_L = V_U + PVtaxshields = V_U + T_C D$

$V_L = V_U + PVtaxshields - PVbankruptacy\cos ts + PVagency\cos tsOE - PVagency\cos tOD$

47. $G_L = \left[1 - \frac{(1-T_c)(1-T_{PS})}{(1-T_{PD})}\right] \times D$

48. $D_t = \rho EPS_t$

49. $ax^2 + bx + c = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

50. BEP = $\frac{fixed\cos ts}{Contributionm\arg in}$